Announcements

• Read
  ■ Assignment about reading out (1/19) & due 1/26 Tues.
  □ (On ecommons)
  □ Readings: Laudon & Laudon Ch 3 (41-69, can skip cases on 53 and 67)

• Office hours
  □ E2 549B, 3-5pm, today.

• Business paper group
Announcements

- Read Otis & Southwest Case Assignment about reading due 1/26 Tues.
  (On ecommons)
- Readings: Laudon & Laudon Ch 3 (41-69, can skip cases on 53 and 67)

Office hours
- E2 549B, 3-5pm, today.

Business paper group

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Group Tutoring

Anshika Kumar
ankumar@ucsc.edu

You MUST sign up Thu. 6-7pm
How to sign up
lss.ucsc.edu

Small Group Tutoring

Session 1:
- Wed. 11-12pm, 5-6pm
- Sci & Eng Library
  Lower Study Rooms

How to sign up
If you qualify for classroom accommodations because of a disability,

- Contact DRC at 831-459-2089 or by email at drc@ucsc.edu.
  - Get “accommodation authorization”
- Submit your Accommodation Authorization to me
  - office hours or after class
  - preferably within the first two weeks of the quarter
Database Tutorial Sessions

- Try to attend ONE of the following three sessions
  - (they will all cover the same stuff)

Merrill Room 103

- Thursday, 1/21/16, 11:30-1:00pm
- Friday, 1/22/16, 5:00-6:30pm
- Monday, 1/25/16, 5:00-6:30pm
Porter Competitive Model?

- **What is it?**
  - A model to help understand the competitive environment in which a company operates.

- **What are the “5 forces”?**
  - Intra-Industry Competition
  - Bargaining power of Suppliers
  - Bargaining power of Customers
  - Substitutes
  - Threat of New Entrants.
Porter Competitive Model

(Identify the Industry and the Specific Market Being Evaluated)

- Potential New Entrants
- Intra-Industry Rivalry
  - Strategic Business Unit
- Bargaining Power of Suppliers
- Bargaining Power of Buyers
- Substitute Products and Services

M. E. Porter (1979) The Five Competitive Forces That Shape Strategy, HBR.
Porter Competitive Model
(Identify the Industry and the Specific Market Being Evaluated)

Source: www.mindtools.com/pages/article/newTMC_08.htm
Intra-Industry Rivalry

SBU: AT&T
Rivals: Verizon, Sprint-Nextel, T-Mobile

Potential New Entrants

- Foreign Telcos
- Change of strategy from player in another industry

Bargaining Power of Buyers

- Retail Customers
- Corporate Customers

Bargaining Power of Suppliers

- Handset makers
- Equipment Manufacturers
- Employees

Substitute Products and Services

- VoIP services; VoIP over wifi
- Messaging, social-networks over wifi

SBU: strategic business unit
Porter Model in Business Paper

- You must include a Porter Model in your Business Paper
  - Figure
    - Make it look nice!
  - Narrative analysis of the five forces
    - Identify the industry.
    - Identify the major buyers, suppliers, potential new entrants, substitutes, and inta-industry rivals.
    - Discuss if and why these players put strong or weak competitive pressures on your business.
Example: Usefulness of Porter Model

- Bob wants to start a dentist office
  - However, bob did not go to dental school
  - Bob will hire the dentist and other staff
  - Is this a good model?

<table>
<thead>
<tr>
<th>Suppliers</th>
<th>Bob’s Dentist Office</th>
<th>Buyers</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dentist (Alice)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

New Entrants

Substitutes
Example: Usefulness of Porter Model

Bob wants to start a dentist office
- However, bob did not go to dental school
- Bob will hire the dentist and other staff
- Is this a good model?

No! Dentist has too much bargaining power, she could always go into business for herself.
Example: Usefulness of Porter Model

- Suppose Alice, who is a dentist, opens an office

- Suppliers
  - Staff
  - Hygienists

- Intra-industry rivals
  - SBU: Alice’s Dentist Office
  - Other local dentist offices

- New Entrants
  - Dental School Graduates
  - Dentists moving in from other regions

- Buyers
  - Public in general
  - Insurance companies
  - Those wanting cosmetic dentistry

- Substitutes
  - Alternative Medicine?
“Primary” Porter Strategies

- In economics you will learn a market where
  - Product is a commodity
  - Firms all have the same production costs
  - New firms can enter market at no cost (“free entry”)
  
  profits are driven to zero.

- Consequently Firms need to
  - Differentiate and/or
  - Achieve Cost leadership
“Primary” Porter Strategies

**Differentiation**—customer values the differences that you provide in products, services or capabilities.

**Cost**—become the lowest cost provider. If this is the only primary strategy in the industry, over time there will only one ultimate winner.
Porter Supporting Strategies

- **Innovation**
  - Can reduce costs and or **differentiate**

- **Growth**
  - Help offset fixed **costs**
  - Establish reputable brand (differentiate)

- **Alliances**
  - Achieve more complete solution (differentiate)
  - Integration of each others technology may **reduce costs**
Porter Model Tips

1. Defining the industry can cause major problems
2. Identify the specific market being evaluated
3. Your company is the “Strategic Business Unit”
4. Identify rivals by name for majors, by category for minor rivals
Porter Model Tips

5. Be sure to address the power implications of both customers and suppliers. Power gets them what?

6. Identify buyers and suppliers by categories and mention major ones by names.

7. Summarize your Porter Model analysis.
What do Porter Models Have to do with IT?

Any ideas?
Porter Model and Information Systems:

1. Build entry barriers to prevent a company from entering an industry

2. Build in costs (switch costs) that would make it difficult for a customer to switch to another supplier

3. Change the basis for competition within the industry

4. Change the balance of power between a company and its customers or suppliers

5. Provide the basis for new products and services
Rules Regarding Strategies

- Must pick *at least* one of the two primary strategies.

- Can pick any combination of supporting strategies.

Let’s test the logic of this using Southwest Airline and Wal-Mart Stores.
Case Study: Southwest Case

Follow the Porter’s “competitive” model:

1. Understand “market landscape” using the 5 forces:
   a. Competitive rivalry
   b. Threat of new entry
   c. Buy power
   d. Supplier power
   e. Threat of substitutions

2. Discuss what the Southwest did leads to its success? (Please be specific on how its action impact each of the 5 forces.)
Southwest Airline Strategies

Primary Strategy:
- Differentiation
- Least Cost

Supporting Strategies:
- Innovation
- Growth
- Alliances
Case Study: Wal-Mart Case

Follow the Porter’s “competitive” model:

1. Understand “market landscape” using the 5 forces:
   a. Competitive rivalry
   b. Threat of new entry
   c. Buy power
   d. Supplier power
   e. Threat of substitutions

2. Discuss what the Wal-mart did leads to its success? (Please be specific on how its action impact each of the 5 forces.)
Wal-Mart Strategies

Primary Strategy:
- Least Cost
- Differentiation

Supporting Strategies:
- Innovation
- Growth
- Alliances
Announcements

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  - E2 549B, 3-5pm, Thursday.

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  - Questions/Concerns?
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1) Low-cost leadership
2) Product differentiation
3) Focus on market niche
4) Strengthen customer and supplier intimacy

*Early effort has been focused on 1, and more recent are on 2-4.*
Information System Strategies for Dealing with Competitive Forces

1) Low-cost leadership

- Use information systems to achieve the lowest operational costs and the lowest prices; \( \text{profit} = \text{price} \times \text{sales-cost} \)

- E.g. Wal-Mart
  
  - Inventory replenishment system sends orders to suppliers when purchase recorded at cash register, e.g., bar code, share info with suppliers and reduced its overhead to 17% compared to 25% (Sears)

  - Minimizes inventory at warehouses, operating costs.

  - Efficient customer response system, e.g., link customers behavior (holidays) to upstream.
Information System Strategies for Dealing with Competitive Forces

2) Product differentiation

- Use information systems to enable new products and services, or greatly change the customer convenience in using your existing products and services.

- E.g., Google’s continuous innovations (e.g., Google Wallet), Apple’s iPhone (New App), Amazon (check out).

- Use information systems to customize, personalize products to fit specifications of individual consumers.

  - E.g., Dell
### IS-Enable New Product and Services Providing Competitive Advantage*

<table>
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<tr>
<th>Category</th>
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<td>Amazon: One-click shopping</td>
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<td>An integrated handheld player backed up with an online library of over 26 million songs</td>
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<td>Customers can select from more than 1 million different golf club options; a build-to-order system ships their customized clubs within 48 hours</td>
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### IS-Enable New Product and Services Providing Competitive Advantage*

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**Discussion:** Any of your experience about effort by firms for “product differentiation”? e.g., Hertz, others? Anything at “local” level?
3) Focus on market niche (≈ product differentiation).

- Use information systems to enable specific market focus, and serve “narrow” target market better than competitors.
  - Analyzes customer buying habits, preferences, tastes (e.g., recommending system)
  - Advertising pitches to smaller and smaller target markets
- E.g., Hilton Hotel’s OnQ System
  - Analyzes data collected on guests to determine preferences and guest’s profitability

Discussion: Any of your experience of information systems that analyze buyers’ behavior and use it to enhance its business?
Information System Strategies for Dealing with Competitive Forces

Strengthen customer and supplier intimacy (switching cost increase).

- Strong linkages to customers and suppliers increase switching costs and enhance loyalty
- **Toyota**: uses IS to facilitate direct access from suppliers to production schedules
  - Permits suppliers to decide how and when to ship suppliers to factories, allowing more lead time in producing goods.
- **Apple care** (any experience?)
- **Amazon**: keeps track of user preferences for purchases, and recommends titles purchased by others
Information System Strategies for Dealing with Competitive Forces

- Strengthen customer and supplier intimacy (switching cost↑).
  - Strong linkages to customers and suppliers increase switching costs and enhance loyalty
  - **Toyota**: uses IS to facilitate direct access from suppliers to production schedules
    - Permits suppliers to decide how and when to ship suppliers to factories, allowing more lead time in producing goods.
  - **Amazon**: keeps track of user preferences for purchases, and recommends titles purchased by others

Discussions: Do you have any experience that some firms really care about customers?
# Information System Strategies for Dealing with Competitive Forces: A Summary

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<tr>
<th>Strategy</th>
<th>Description</th>
<th>Example</th>
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<tbody>
<tr>
<td>Low-cost leadership</td>
<td>Use information systems to produce products and services at a lower price than competitors while enhancing quality and level of service</td>
<td>Walmart</td>
</tr>
<tr>
<td>Product differentiation</td>
<td>Use information systems to differentiate products, and enable new services and products</td>
<td>Google, eBay, Apple, Starbucks</td>
</tr>
<tr>
<td>Focus on market niche</td>
<td>Use information systems to enable a focused strategy on a single market niche; specialize</td>
<td>Hilton Hotels, Harrah’s</td>
</tr>
<tr>
<td>Customer and supplier intimacy</td>
<td>Use information systems to develop strong ties and loyalty with customers and suppliers</td>
<td>Toyota Corporation, Amazon</td>
</tr>
</tbody>
</table>
Some companies pursue several strategies at the same time.

- Dell emphasizes low cost plus customization of products.

Successfully using IS to achieve competitive advantage requires precise coordination of technology, organizations, and people.
### The Internet’s Impact on Competitive Advantage: Mapping to the Porter’s framework

<table>
<thead>
<tr>
<th>Competitive Force</th>
<th>Impact of the Internet</th>
</tr>
</thead>
<tbody>
<tr>
<td>Substitute products or services</td>
<td>Enables new substitutes to emerge with new approaches to meeting needs and performing functions</td>
</tr>
<tr>
<td>Customers’ bargaining power</td>
<td>Shifts bargaining power to customers due to the availability of global price and product information</td>
</tr>
<tr>
<td>Suppliers’ bargaining power</td>
<td>Tends to raise bargaining power over suppliers in procuring products and services; however, suppliers can benefit from reduced barriers to entry and from the elimination of distributors and other intermediaries standing between them and their users</td>
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### The Internet’s Impact on Competitive Advantage: Mapping to the Porter’s framework

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<td>Threat of new entrants</td>
<td>Reduces barriers to entry, such as the need for a sales force, access to channels, and physical assets; it provides a technology for driving business processes that makes other things easier to do</td>
</tr>
<tr>
<td>Positioning and rivalry among existing competitors</td>
<td>Widens the geographic market, increasing the number of competitors and reducing differences among competitors; makes it more difficult to sustain operational advantages; puts pressure to compete on price</td>
</tr>
</tbody>
</table>
Porter’s Value Chain

- The Competitive Model of five forces deals with the environment within which a company competes (static).

- The Value Chain addresses the flow of a product through the organization (dynamics).
  - It starts with the original idea in research and tracks its progress all the way to the customers.
  - View firm as a series of basic activities that add a margin of value (e.g., value-added supply chain) to its products/services.
The Business Value Chain Model: Highlights activities in a business where competitive strategies can best be applied and ISs are likely to have a strategic impact.

- **Primary activities (physical processes)**
  - Directly related to production and distribution of firm’s products or services

- **Support activities (organic process)**
  - Make delivery of primary activities possible, including administrative, management, human resources, technology and procurement
The Value Chain Model

- **Support Activities**
  - Administration and Management: Electronic scheduling and messaging systems
  - Human Resources: Workforce planning systems
  - Technology: Computer-aided design systems
  - Procurement: Computerized ordering systems

- **Primary Activities**
  - Inbound Logistics: Automated warehousing systems
  - Operations: Computer-controlled machining systems
  - Sales and Marketing: Computerized ordering systems
  - Service: Equipment maintenance systems
  - Outbound Logistics: Automated shipment scheduling systems

- **Sourcing and Procurement Systems**
- **Customer Relationship Management Systems**

- **Benchmark**

- **Industry Value Chain**

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Discussions: Please describe the business value chain in a business where you have experience.
Using Information Systems to Achieve Competitive Advantage at industry level

**Extended Value Supply Chain to “The Value Web”**

Create a networked system

1) Synchronizes the value chains of partners
2) Respond rapidly to supply and demand

*E.g., create industry level standard*
- increase efficiency
- raise entry cost
- minimize product substitution
Using Information Systems to Achieve Competitive Advantage at industry level

Extended Value Supply Chain to “The Value Web”

For instance, with Amazon.com, you want to make it easier for

a. Suppliers to display goods and open stores at Amazon site;

b. Customers to pay for goods;

And develop a system

a. That coordinates the logistics, e.g., shipment

b. That allows tracking shipment.

- raise entry cost
- minimize product substitution
Synergies, Core Competencies, and Network-Based Strategies

- A large corporate is organized as a collection of strategic business units, and the return to the firm is directly linked to the performance of all the units.

- **Synergies:** (≈collaboration)
  - When output of some units can be used as inputs to other units.
  - When two “organizations” can pool markets and expertise (e.g., mergers, business paper).
    - Lower costs and generate profits.
    - Enabled by information systems that ties together disparate units so they act as whole, e.g., collaborate, coordination tools, knowledge aggregator.
Network-based strategies:

- **Network economics:** (v.s. diminishing return)
  - Marginal costs of adding another participant are near zero, whereas marginal gain is much larger
  - e.g., larger number of participants in Internet, greater value to all participants, yelp, travel-advisor, others?

- **Virtual company:**
  - Uses networks to link people, resources, and ally with other companies to create and distribute products without traditional organizational boundaries or physical locations, e.g., explore external vendor
Synergies, Core Competencies, and Network-Based Strategies

Core competency:
- Activities firm is world-class in
  - e.g., world’s best miniature parts designer, best package delivery service.
- Knowledge gained over many years of experience + research.
- Information system that encourages the sharing or fostering of knowledge across business units helps.
  - e.g., Procter & Gamble uses intranet to help people working on similar problems share ideas and expertise.
Disruptive Technologies: Riding the Wave

Disruptive technologies:

- Substitute products that perform as well or better than anything currently products.
  
  - Personal computers
  - World Wide Web
  - Internet music services
  - Digital photography

- First movers versus fast followers

  - First movers of disruptive technologies may fail to see potential, allowing second movers to reap rewards (fast followers), e.g., think about first-gen immigrant
### Disruptive Technologies: Riding the Wave

<table>
<thead>
<tr>
<th>Technology</th>
<th>Description</th>
<th>Winners and Losers</th>
</tr>
</thead>
<tbody>
<tr>
<td>Microprocessor chips (1971)</td>
<td>Thousands and eventually millions of transistors on a silicon chip</td>
<td>Microprocessor firms win (Intel, Texas Instruments) while transistor firms (GE) decline</td>
</tr>
<tr>
<td>Personal computers (1975)</td>
<td>Small, inexpensive, but fully functional desktop computers</td>
<td>PC manufacturers (HP, Apple, IBM), and chip manufacturers prosper (Intel), while mainframe (IBM) and minicomputer (DEC) firms lose</td>
</tr>
<tr>
<td>Digital photography 1975</td>
<td>Using charge-coupled device (CCD) image sensor chips to record images</td>
<td>CCD manufacturers and traditional camera companies win, manufacturers of film products lose</td>
</tr>
<tr>
<td>World Wide Web (1989)</td>
<td>A global database of digital files and “pages” instantly available</td>
<td>Owners of online content, news benefit while traditional publishers (newspapers, magazines, and broadcast television) lose</td>
</tr>
<tr>
<td>Technology</td>
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<tr>
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<tr>
<td>internet music, video, TV services</td>
<td>repositories of downloadable music, video, TV broadcasts on the Web</td>
<td>Owners of Internet platforms, telecommunications providers owning Internet backbone (AT&amp;T, Verizon), local Internet service providers win, while content owners and physical retailers lose (Tower Records, Blockbuster)</td>
</tr>
<tr>
<td>PageRank algorithm</td>
<td>A method for ranking Web pages in terms of their popularity to supplement Web search by key terms</td>
<td>Google is the winner (they own the patent), while traditional key word search engines (Alta Vista) lose</td>
</tr>
<tr>
<td>Software as Web service</td>
<td>Using the Internet to provide remote access to online software</td>
<td>Online software services companies (Salesforce.com) win, while traditional “boxed” software companies (Microsoft, SAP, Oracle) lose</td>
</tr>
</tbody>
</table>
Prior to the Internet, competing globally was only an option for huge firms able to afford factories, warehouses, and distribution centers abroad.

The Internet drastically reduces costs of operating globally.

Globalization benefits:

- scale economies and resource cost reduction, e.g., access to resources in other countries
- higher utilization rates, fixed capital costs, and lower cost per unit of production, e.g., outsourcing
- access to greater market, e.g., any example?
- speeding time to market, e.g., any example?
An Apple’s iPhone Path to Market

US: Design
South Korea: Application processor
Italy: accelerator
France: gyroscope
Japan: electronic compass
Germany: power management
US: touch screen controller
Japan: HD display
Taiwan: manufacturing and assembly

Apple iPhone’s global supply chain of a number of different countries.
Please Read Otis’s Case Study:

1. Think about the Otis’s situation using the Porter’s Competitive & value supply chain model.
2. Discuss how “e*Logistics” improved the various business processes at OTIS? Or what are problems faced by the OTIS in each of the “primary activities”? That is, what are the factors that led to the creation of e*Logistics?
3. What are the changes Bousbib wanted to see in OTIS elevator's business model?
4. What is early IS systems OTISLINE and REM elevator monitoring and how did they transform the elevator service business process at OTIS?
5. Why was SIMBA program created and how was OTIS benefited from it?
4 Ways to Organize International Business

- **Domestic exporters (Caterpillar Corp.)**
  - Heavy centralization of corporate activities in home country

- **Multinationals (Ford, Intel Corp.)**
  - Concentrates financial management at central home base
  - Decentralize production, sales, and marketing to other countries

- **Franchisers (McDonald, Starbucks)**
  - Product created, designed, financed, and initially produced in home country
  - Rely on foreign units for further production, marketing, and human resources, e.g., dollar menu

- **Transnationals**
  - Regional (not national) headquarters and perhaps world headquarters; optimizing resources as needed; global scale, e.g., Nestle
Global System Configurations

- **Centralized systems:**
  - All development and operation at domestic home base

- **Duplicated systems:**
  - Development at home base but operations managed by autonomous units in foreign locations

- **Decentralized systems:**
  - Each foreign unit designs own solutions and systems

- **Networked systems:**
  - Development and operations occur in integrated and coordinated fashion across all units
The large Xs show the dominant patterns, and the small Xs show the emerging patterns. For instance, domestic exporters rely predominantly on centralized systems, but there is continual pressure and some development of decentralized systems in local marketing regions.

**Figure 3-5**
What Is Quality? A form of differentiation

- **Producer perspective:**
  - Conformance to specifications and absence of variation from specs

- **Customer perspective:**
  - Physical quality (reliability), quality of service, psychological quality

**Discussions: quality of wireless carrier**

- **Total quality management (TQM):**
  - Quality control is end in itself
  - All people (engineers, workers, sales), functions responsible for quality

- **Six sigma:**
  - Measure of quality: 3.4 defects/million opportunities
How Information Systems Improve Quality

- **Reduce “cycle time” and simplify production process.**
  - Total elapsed time from start of the process to its end
- **Benchmarking**
  - Set standard for each step of the process
- **Use customer demands (feedbacks) to improve products and services.**
- **Improve design quality and precision.**
  - Computer-aided design (CAD) systems or even 3-D printing to create or revise the design
- **Improve production precision and tighten production tolerances.**
Computer-aided design (CAD) systems improve quality of product design.
• Business process management = continuous improvement

  1) Identify processes for change.
  2) Analyze existing processes.
  3) Design new process.
     – A few “to-be” processes need to be considered
  4) Implement new process.
     – Employees’ feedbacks to improve the process
  5) Measure new process
     – Need to justify by reduced time, cost or enhanced customer service value, etc.
Radical Change: Business Process “Reengineering”

- A radical form of fast change
- Not continuous improvement, but elimination of old processes, replacement with new processes, in a brief time period
- Can produce dramatic gains in productivity, but increases organizational resistance to change
  - Could be risky as its impact or acceptance was not previously understood.
• Businesses are collections of business processes—

• Some times they are written in manuals, but in many cases business processes are informal.

• To use IS effectively, you need to change business processes.

• Before changing processes, you need to change people’s attitudes and behaviors, and even the organization itself.